UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/069,575	06/12/2002	Jacques Bartholeyns	0508-1001	1526

466 7590 05/12/2004

YOUNG & THOMPSON
745 SOUTH 23RD STREET 2ND FLOOR
ARLINGTON, VA 22202

EXAMINER	
DAVIS, RUTH A	

ART UNIT	PAPER NUMBER
1651	

DATE MAILED: 05/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/069,575	BARTHOLEYNS, JACQUES	
	Examiner	Art Unit	
	Ruth A. Davis	1651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 March 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *15-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Applicant's amendment and response filed March 1, 2004 has been received and entered into the case. Claims 1 – 14 are canceled; claims 15 – 20 are added. Claims 15 – 20 are pending and have been considered on the merits. All arguments have been fully considered.

Claim Rejections - 35 USC § 112

Rejections under 35 U.S.C. 112, second paragraph, have been withdrawn due to amendment.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 15 – 17 and 19 – 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Naughton.

Applicant claims a biomaterial composition comprising a porous biocompatible composite material implanted with monocyte derived cells (macrophages). The biocompatible material is selected from microfibers, ceramic materials, metal oxides, calcium phosphate ceramic, glass fibers, carbon fibers, hydroxylapatite, silicon carbide, silicon nitride, collagen polymers or mixtures thereof; and the macrophages are obtained by ex vivo differentiation of blood monocytes, and are cultured to penetrate and adhere to the biomaterial which are substantially irreversibly bound to the biomaterial (the patient's macrophages). Applicant additionally claims an implant comprising a porous biocompatible composite implanted with monocyte derived cells (macrophages, preferably a scaffold, sponges, bone or cartilage).

Naughton teaches a composite composition comprising a three dimensional support matrix implanted with stromal cells such as monocytes or macrophages (abstract). The composite system is disclosed as a bone or skin implant (col.5 line 33-47). The matrix is made from any material to which cells may attach, and can be woven into a mesh (tissue supporting sponge) (col.7 line 1-12) with collagens (col.9 line 10-17). The cells are autologous (obtained from the patient) and are grown according to the site of implantation (col.7 line 45-51, col.9 line 7-9). (see also col.20 line 10-32, col.21 line 7-13, and col.22 line 5-29).

Although Naughton does not specifically teach the cells are obtained as claimed, the patentability of a product does not depend on its method of production. If the claimed product is the same or obvious from a product in the prior art (i.e. the product disclosed in the cited reference), the claim is unpatentable even though the reference product was made by a different process. When the prior art discloses a product which reasonably appears to be identical with or slightly different than the claimed product-by-process, rejections under 35 U.S.C 102 and/or 35

U.S.C 103 are proper. (MPEP 2113). It is noted that applicant admits that such methods of obtaining macrophages is routine in the art (specification, examples).

Therefore, the reference anticipates the claimed subject matter.

3. Claims 15 – 17 and 19 – 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee.

Applicant claims a biomaterial composition comprising a porous biocompatible composite material implanted with monocyte derived cells (macrophages). The biocompatible material is selected from microfibers, ceramic materials, metal oxides, calcium phosphate ceramic, glass fibers, carbon fibers, hydroxylapatite, silicon carbide, silicon nitride, collagen polymers or mixtures thereof; and the macrophages are obtained by ex vivo differentiation of blood monocytes, and are cultured to penetrate and adhere to the biomaterial which are substantially irreversibly bound to the biomaterial (the patient's macrophages). Applicant additionally claims an implant comprising a porous biocompatible composite implanted with monocyte derived cells (macrophages, preferably a scaffold, sponges, bone or cartilage).

Lee teaches a calcium phosphate material seeded with autologous (col.6 line 60-66) living cells (abstract) such as osteoclasts (bone degrading, macrophages) (col.4 line 42-47), used as scaffold implants (col.3-4). Lee additionally teaches autologous implants comprising osteoclast or macrophage cultures on the calcium phosphate material (col.10 line 18-51).

Although Lee does not specifically teach the cells are obtained as claimed, the patentability of a product does not depend on its method of production. If the claimed product is the same or obvious from a product in the prior art (i.e. the product disclosed in the cited

reference), the claim is unpatentable even though the reference product was made by a different process. When the prior art discloses a product which reasonably appears to be identical with or slightly different than the claimed product-by-process, rejections under 35 U.S.C 102 and/or 35 U.S.C 103 are proper. (MPEP 2113). It is noted that applicant admits that such methods of obtaining macrophages is routine in the art (specification, examples).

Therefore, the reference anticipates the claimed subject matter.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 15 – 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naughton.

Applicant claims a biomaterial composition comprising a porous biocompatible composite material implanted with monocyte derived cells (macrophages). The biocompatible material is selected from microfibers, ceramic materials, metal oxides, calcium phosphate ceramic, glass fibers, carbon fibers, hydroxylapatite, silicon carbide, silicon nitride, collagen polymers or mixtures thereof; the biocompatible composite id aluminum oxide; and the macrophages are obtained by ex vivo differentiation of blood monocytes, and are cultured to penetrate and adhere to the biomaterial which are substantially irreversibly bound to the biomaterial (the patient's macrophages). Applicant additionally claims an implant comprising a

porous biocompatible composite implanted with monocyte derived cells (macrophages, preferably a scaffold, sponges, bone or cartilage).

Naughton teaches a composite composition comprising a three dimensional support matrix implanted with stromal cells such as monocytes or macrophages (abstract). The composite system is disclosed as a bone or skin implant (col.5 line 33-47). The matrix is made from any material to which cells may attach, and can be woven into a mesh (tissue supporting sponge) (col.7 line 1-12) with collagens (col.9 line 10-17). The cells are autologous (obtained from the patient) and are grown according to the site of implantation (col.7 line 45-51, col.9 line 7-9). (see also col.20 line 10-32, col.21 line 7-13, and col.22 line 5-29).

Although Naughton does not specifically teach the cells are obtained as claimed, the patentability of a product does not depend on its method of production. If the claimed product is the same or obvious from a product in the prior art (i.e. the product disclosed in the cited reference), the claim is unpatentable even though the reference product was made by a different process. When the prior art discloses a product which reasonably appears to be identical with or slightly different than the claimed product-by-process, rejections under 35 U.S.C 102 and/or 35 U.S.C 103 are proper. (MPEP 2113). It is noted that applicant admits that such methods of obtaining macrophages is routine in the art (specification, examples).

Naughton does not teach the composite matrix with each of the claimed composite materials or in each of the claimed structures. However, at the time of the claimed invention, it would have been obvious to one of ordinary skill in the art to substitute any of the named materials or structures in the implant of Naughton, since they were all well known and used for the same purpose. Moreover, at the time of the claimed invention, one or ordinary skill in the art

would have been motivated by routine practice to use any of the claimed implant materials and/or structures in the composite of Naughton with a reasonable expectation for successfully obtaining the composite matrix.

6. Claims 15 – 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee.

Applicant claims a biomaterial composition comprising a porous biocompatible composite material implanted with monocyte derived cells (macrophages). The biocompatible material is selected from microfibers, ceramic materials, metal oxides, calcium phosphate ceramic, glass fibers, carbon fibers, hydroxylapatite, silicon carbide, silicon nitride, collagen polymers or mixtures thereof; the biocompatible material is aluminum oxide; and the macrophages are obtained by ex vivo differentiation of blood monocytes, and are cultured to penetrate and adhere to the biomaterial which are substantially irreversibly bound to the biomaterial (the patient's macrophages). Applicant additionally claims an implant comprising a porous biocompatible composite implanted with monocyte derived cells (macrophages, preferably a scaffold, sponges, bone or cartilage).

Lee teaches a calcium phosphate material seeded with autologous (col.6 line 60-66) living cells (abstract) such as osteoclasts (bone degrading, macrophages) (col.4 line 42-47), used as scaffold implants (col.3-4). Lee additionally teaches autologous implants comprising osteoclast or macrophage cultures on the calcium phosphate material (col.10 line 18-51).

Although Lee does not specifically teach the cells are obtained as claimed, the patentability of a product does not depend on its method of production. If the claimed product is the same or obvious from a product in the prior art (i.e. the product disclosed in the cited

reference), the claim is unpatentable even though the reference product was made by a different process. When the prior art discloses a product which reasonably appears to be identical with or slightly different than the claimed product-by-process, rejections under 35 U.S.C 102 and/or 35 U.S.C 103 are proper. (MPEP 2113). It is noted that applicant admits that such methods of obtaining macrophages is routine in the art (specification, examples).

Lee does not teach the composite matrix with each of the claimed composite materials or in each of the claimed structures. However, at the time of the claimed invention, it would have been obvious to one of ordinary skill in the art to substitute any of the named materials or structures in the implant of Lee, since they were all well known and used for the same purpose. Moreover, at the time of the claimed invention, one or ordinary skill in the art would have been motivated by routine practice to use any of the claimed implant materials and/or structures in the implant of Lee with a reasonable expectation for successfully obtaining an autologous implant.

Response to Arguments

Applicant argue that Naughton teaches fibroblasts incorporated into the composite which may contain macrophages; that Naughton does not teach only macrophages as the cells; and that Naughton relies on the structure of fibroblasts for the structure.

Applicant argues that while Lee does teach a porous composite with macrophages, Lee does not use the implant for in vivo use, but in vitro use. Applicant additionally argues that Lee does not teach the function of the macrophages, in that they induce tissue repair.

However, these arguments fail to persuade because the claims are not limited to consist only of macrophages. Naughton specifically teaches a composite material wherein macrophages are included, thus meeting the limitations of the claim.

Regarding Lee, while the reference may not identify the function of the macrophages, or that the composite may be used in vivo, the biomaterials are the same. It is noted that the intended use of the claimed composition does not patentably distinguish the composition, per se, since such undisclosed use is inherent in the reference composition. In order to be limiting, the intended use must create a structural difference between the claimed composition and the composition of the prior art. In the instant case, the intended use fails to create a structural difference, thus, the intended use is not limiting.

Therefore the claims remain rejected.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ruth A. Davis whose telephone number is 571-272-0915. The examiner can normally be reached on M-H (7:00-4:30); altn. F (7:00-3:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Wityshyn can be reached on 571-272-0926. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ruth A. Davis; rad
May 8, 2004.

LEON B. LANKFORD, JR.
PRIMARY EXAMINER